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10/730,006	12/09/2003	Yasuyuki Kamijo	46159	2736

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EXAMINER

KINNEY, ANNA L

ART UNIT PAPER NUMBER

1731

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/730,006

Applicant(s)

KAMIJO ET AL.

Examiner

Anna Kinney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 5, 10 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/9/03</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Specification*

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the length exceeds 150 words. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: on page 14, line 5, a space is missing between "0.05%" and "sodium hydroxide"; on page 19, line 7, the word "is" should be "has"; on page 20, line 10, the comma after "invention" is unnecessary.

Appropriate correction is required.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Process for impregnating, refining, and bleaching wood chips having low bleachability to prepare mechanical pulps having high brightness.

***Claim Objections***

Claims 5, 10, and 11 are objected to because of the following informalities: on line 3 of claim 5, the word "of" between "more" and "wood" is unnecessary; on line 5 of both claims 10 and 11 start with the word "on", whereas the word "or" appears intended. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3, and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the impregnated chemical liquor" in lines 4 to 5 of the claim. Claim 3 contains the same limitation in lines 6 and 8 of the claim. Claim 4 contains the same limitation in lines 6 and 8 of the claim. There is insufficient antecedent basis for this limitation in the claims. The first reference to a chemical liquor in claim 1 does not include the prefix "impregnated" or "impregnating". However, the chemical liquor is used to impregnate wood chips. Since the chips are the subject of impregnation, not the liquor, the limitation in claim 2, "the impregnating chemical liquor", is most likely what the applicant intended.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danielsson et al (WO Publication 90/02835) in view of Jackson et al (U.S. Patent 4,789,429).

With respect to claim 1, Danielsson et al discloses a process for preparing bleached mechanical pulp (Abstract, lines 1 through 6) having high brightness (page 1, lines 18 to 22) from wood chips comprising the steps of impregnating wood chips (Abstract, lines 2 to 3) having low bleachability (page 1, lines 29 to 33) with a chemical liquor (abstract, lines 2 to 3) and then removing the impregnated chemical liquor from the chips (page 3, lines 31 to 35), followed by a sequential step of defibration by primary refining, bleaching, and beating by secondary refining (Abstract, lines 3 to 6). Danielsson et al does not expressly disclose that the impregnation occurs at a pH range of 7-12.

Jackson et al discloses that the pH range of the impregnation chemicals is about 6 to 12, which includes one specific end point from the claimed range of 7 to 12.

With respect to claim 2, Danielsson et al discloses that the impregnating chemical liquor is an aqueous solution of an alkaline inorganic compound (page 3, lines 24 to 27).

With respect to claim 8, Danielsson et al discloses a process for preparing bleached mechanical pulp (Abstract, lines 1 through 6) having high brightness (page 1, lines 18 to 22) comprising the steps of defibrating wood chips by primary refining

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(Abstract, lines 3 to 6), washing pulp fibers formed by defibration (page 4, lines 2 to 5), bleaching the pulp fibers, and further beating them by secondary refining (Abstract, lines 3 to 6) to give bleached mechanical pulp having an ISO brightness of about 74 to about 82% (Figure 1). Danielsson does not disclose expressly that the bleached mechanical pulp has a Hunter brightness of 45-65%.

Jackson et al discloses a bleached mechanical pulp having an ISO brightness above about 70 (col. 2, lines 34 to 40). The Examiner lacks a specific relationship to compare ISO brightness with Hunter brightness. Therefore, the Examiner considers that an ISO brightness of about 70 will include values within the range of 45 to 65% Hunter brightness.

With respect to claim 12, Danielsson et al does not disclose expressly that the step of bleaching defibrated pulp after washing comprises single-stage bleaching with an oxidizing agent or a reducing agent.

Jackson et al discloses expressly that the step of bleaching defibrated pulp after washing comprises single-stage bleaching with peroxide (an oxidizing agent) or dithionite (a reducing agent) (col. 2, lines 35 to 37).

Danielsson et al and Jackson et al are analogous art because they are both from the same field of endeavor, that of mechanically pulping and bleaching wood chips.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the pH range as described by Jackson et al in the impregnation step of Danielsson et al to obtain the invention as specified in claims 1 and 2. The suggestion for doing so would have been that the alkali charge during the impregnation

step shall be determined only with regard being paid to the shives content and fibre distribution number and disregarding the pulp strength obtained by the alkali charge during the bleaching step (Danielsson et al, page 2, line 32 to page 3, line 1). Although the pH identified by Danielsson et al for the impregnation liquor is 13, the actual pH during impregnation will likely vary depending upon the shives content and fiber distribution of the wood chips, among other factors, as a result of the chemical charge. It would also have been obvious to a person of ordinary skill in the art to use the brightness goal of Jackson et al in the bleaching operation of Danielsson et al to obtain the invention as specified in claim 8. The suggestion for doing so would have been that the bleaching step has thus rendered the pulp easier to be processed to the desired quality (Jackson et al, col. 3, lines 48 to 50) for the manufacture of LWC paper, or paper of similar quality (Jackson et al, col. 3, lines 61 to 62). It would have further been obvious to a person of ordinary skill in the art to use the single oxidizing or reducing bleaching stage as described by Jackson et al in the bleaching stage of Danielsson et al to obtain the invention as specified in claim 12. The suggestion for doing so would have been to produce a bleached lignocellulose-containing material having an ISO-brightness above about 70 (col. 2, lines 38 to 40).

Claims 3 and 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Danielsson et al and Jackson et al, as applied to claims 1 and 2 above, and further in view of Sabourin (U.S. Publication 2001/005051 A1).

With respect to claims 3 and 4, Danielsson et al and Jackson et al do not disclose expressly that the chemical impregnation step comprises compressing the

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chips at a compression ratio of 4:1-16:1 and releasing pressure to impregnate them with the chemical liquor and the step of removing the impregnated chemical liquor comprises compressing the chips impregnated with the chemical liquor at a compression ratio of 4:1-16:1 to drain the impregnated chemical liquor.

Sabourin discloses that the chemical impregnation step comprises compressing the chips (page 4, col. 1, lines 1 to 5) at a compression ratio of 4:1 or greater (page 1, col. 2, ¶ 0007, line 1 to 8), which contains one specific endpoint from the claimed range of 4:1-16:1, and releasing pressure to impregnate them with the chemical liquor (page 4, col. 1, lines 6 to 9) and the step of removing the impregnated chemical liquor comprises compressing the chips impregnated with the chemical liquor (page 4, col. 1, lines 9 to 11) at a compression ratio of 4:1 to 8:1 (page 2, col. 1, lines 5 to 7, and ¶ 0011, lines 1 to 2 and 27 to 29), which contains two specific points within the claimed range of 4:1-16:1, to drain the impregnated chemical liquor.

Danielsson et al, Jackson et al, and Sabourin are analogous art because they are directed to a similar problem solving area, that of pretreating lignocellulose prior to mechanical pulping.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the compression ratios of Sabourin before and after the impregnation step of Danielsson et al and Jackson et al to obtain the invention as specified in claims 3 and 4. The motivation for doing so would have been to destructure lignocellulose materials, thereby fostering improved quality pulp and more economical pulp processing conditions (page 1, col. 1, ¶ 0005, lines 1 to 5).

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Claims 5, 6, 9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danielsson et al and Jackson et al, as applied to claims 1, 2, and 8 above, and further in view of Lindahl et al (U.S. Patent 4,160,693) and Rydholm (Pulping Processes, 1967, Interscience Publishers).

Danielsson et al and Jackson et al do not disclose expressly that the wood chips are single chips or mixed chips of two or more of wood species having low bleachability selected from Larix, Pseudotsuga, Cryptomeria, Tsuga, Thuja and Pinus.

Lindahl et al discloses that the wood chips can be pine (Pinus), cedar (Thuja), hemlock (Tsuga), larch (Larix), and fir (Pseudotsuga) (col. 5, lines 54 to 59).

Danielsson et al, Jackson et al, Lindahl et al and Rydholm are analogous art because they are from the same field of endeavor, that of bleaching mechanical pulps.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the wood species described by Lindahl et al as the wood chip source for Danielsson et al and Jackson et al to obtain the invention as specified in claims 5, 6, and 9. The motivation for doing so would have been that the price of such pulpwood has been generally 10-20% lower than that of the softwood species normally used for mechanical pulping (Rydholm, page 548).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Danielsson et al, Jackson et al, and Sabourin as applied to claim 3 above, and further in view of Lindahl et al and Rydholm.

Danielsson et al and Jackson et al do not disclose expressly that the wood chips are single chips or mixed chips of two or more of wood species having low bleachability selected from Larix, Pseudotsuga, Cryptomeria, Tsuga, Thuja and Pinus.

Sabourin discloses that the wood chips are mixed chips of more than two wood species, including species having low bleachability, those being pine (Pinus), hemlock (Tsuga), and larch (Larix) (page 9, ¶0045).

Lindahl et al further discloses that the wood chips can be pine (Pinus), cedar (Thuja), hemlock (Tsuga), larch (Larix), and fir (Pseudotsuga) (col. 5, lines 54 to 59).

With respect to claim 13, Jackson et al is applied as in the rejection to claim 12, above.

Danielsson et al, Jackson et al, Sabourin, Lindahl et al and Rydholm are analogous art because they are from the same field of endeavor, that of bleaching mechanical pulps.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the wood species described by Lindahl et al as the wood chip source for Danielsson et al, Jackson et al and Sabourin to obtain the invention as specified in claim 7. The motivation for doing so would have been that the price of such pulpwood has been generally 10-20% lower than that of the softwood species normally used for mechanical pulping (Rydholm, page 548).

Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danielsson et al and Jackson et al as applied to claim 8 above, and further in view of Devic et al (U.S. Patent 4,812,206).

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With respect to claim 10, Danielsson discloses that the step of washing defibrated pulp comprises dilution with water and dehydration by a press (page 4, lines 2 to 5). Although Danielsson does not disclose expressly the temperature at which the washing is performed, Danielsson does disclose that the pretreatment temperature prior to refining is 50°C, and that the bleaching stage following washing is performed at 70°C, which are two temperatures falling within the claimed range of 5-95°C. The wide range of temperature claimed indicates a lack of criticality. Danielsson et al and Jackson et al does not disclose expressly that the washing efficiency is 52.6-99.2%.

Devic et al discloses a washing efficiency greater than 96% (col. 2, lines 51 to 54), which is one specific point within the claimed range of 52.6 to 99.2%.

With respect to claim 14, Jackson et al is applied as in the rejection to claim 12, above.

Danielsson et al, Jackson et al, and Devic et al are analogous art because they are from the same field of endeavor, that of bleaching mechanical pulp.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to expect a washing efficiency as described by Devic et al from the washing stage of Danielsson et al to obtain the invention as specified in claim 10. The suggestions for doing so would have been that the description of the washing operation in Devic et al (col. 5, lines 23 to 27) does not vary significantly from the description of the washing operation in Danielsson et al (page 4, lines 2 to 5). Therefore, similar washing efficiency should result.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Danielsson et al, Jackson et al, Lindahl et al, and Rydholm as applied to claim 9 above, and further in view of Devic et al.

Devic et al is applied as in the rejection to claim 10, above.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 4,247,362 shows the use of pine furnish in a mechanical pulping process including compression, impregnation, defibration, and bleaching. U.S. Patent 4,116,758 shows production of high yield mechanical pulps. U.S. Patent 4,279,694 shows two stages of mechanical refining and bleaching. U.S. Patent 5,433,825 shows impregnation of pine chips with compression, washing, and refining. A 1999 Pulp & Paper article at [http://www.paperloop.com/db\\_area/archive/p\\_p\\_mag/1999/9905/focus4.htm](http://www.paperloop.com/db_area/archive/p_p_mag/1999/9905/focus4.htm) shows compression before and after impregnation, followed by refining. U.S. Publication 20003/0006016 A1 shows impregnation and refining of pine furnish. U.S. Patent 2,956,918 shows bleaching of mechanical pulp with two refining steps. U.S. Patent 4,798,651 shows impregnation of chips, followed by two stages of refining. U.S. Patent 4,849,053 shows impregnation followed by refining. U.S. Patent 5,002,635 shows impregnation and two stages of refining for pine, fir, and hemlock, with a 4:1 compression ratio. U.S. Publication 2004/0069427 A1 shows multistage refining of pulp. U.S. 6,743,332 shows bleaching of mechanical pulp with two refining stages.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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